

I claim:

*Sub B1*  
*E1* 1. A device for grafting a prosthesis to the <sup>*an interior*</sup> wall of a lumen, said device comprising:

a) a tubular introducer sheath having a longitudinal bore;

b) a prosthesis comprising a tubular graft having a longitudinal bore and disposed in the longitudinal bore of said tubular introducer sheath, said graft being expandable radially to substantially conform to the interior wall of a lumen;

*B* a spring expanding assembly permanently attached to said tubular graft for expanding said graft so that it substantially conforms to the interior wall of a lumen when said prosthesis is removed from said introducer sheath;

an anchoring means for permanently attaching said graft to an interior wall of a lumen;

c) a tubular carrier means having a longitudinal bore and disposed in the longitudinal bore of said tubular graft, said carrier means provided with a plurality of apertures;

d) a central control means for maintaining the axial position of said prosthesis during removal of said introducer sheath, said central control means disposed in the longitudinal bore of said tubular carrier means; and

e) mooring loops engaging said prosthesis and passing through said apertures in said tubular carrier means to engage said central control means.

2. The device of claim 1 further comprising a dilator at one end of said tubular introducer sheath.

3. The device of claim 1 wherein said tubular graft is comprised of non-biodegradable material.

4. The device of claim 1 wherein said tubular graft is comprised of Dacron™.

Sub B2) 5. The device of claim 1 wherein said spring expanding assembly comprises a plurality of spring frames.

6. The device of claim 5 wherein said spring frames are comprised of stainless steel spring wire.

7. The device of claim 5 wherein said spring frames are comprised of plastic.

8. The device of claim 5 wherein said spring frames are comprised of titanium.

9. The device of claim 3 wherein said spring frames are attached to the inside of said tubular graft.

10. The device of claim 3 wherein said spring frames are attached to the outside of said tubular graft.

11. The device of claim 1 wherein said anchoring means comprises a plurality of barbs.

12. The device of claim 11 wherein said barbs are attached to said spring expanding assembly.

13. The device of claim 12 further comprising a shaft between said barbs and said spring expanding assembly.

14. The device of claim 1 wherein said central control means is a flexible rod.

15. The device of claim 1 wherein said central control means is a flexible wire.

16. The device of claim 1 wherein said central control means is a flexible catheter.

17. The device of claim 1 wherein said central control means is a thread.

18. The device of claim 1 wherein said mooring loops are comprised of biodegradable thread.

19. The device of claim 1 wherein said mooring loops are comprised of nondegradable thread.

20. A method for engrafting a prosthesis to the wall of a lumen comprising the steps of:

- a) providing an access to the lumen;
- b) providing a device for engrafting said prosthesis

comprising:

a tubular introducer sheath having a longitudinal bore;

a tubular graft having a longitudinal bore and disposed in the longitudinal bore of said tubular introducer sheath, said graft expandable radially to substantially conform to the interior wall of a lumen;

a spring expanding assembly permanently attached to said tubular graft for expanding said graft so that it substantially conforms to the interior wall of a lumen when said prosthesis is removed from said introducer sheath;

an anchoring means for permanently attaching said graft to an interior wall of a lumen;

a tubular carrier means having a longitudinal bore and disposed in the longitudinal bore of said tubular graft, said tubular carrier means provided with a plurality of apertures;

a central control means for maintaining the axial position of said prosthesis during removal of said introducer sheath, said central control means disposed in the longitudinal bore of said tubular carrier means; and

mooring loops engaging said prosthesis and passing through said apertures in said tubular carrier means to engage said central control means;

- c) inserting said device into said access and urging

said device into a lumen to a desired location within the lumen;

d) withdrawing said tubular introducer sheath to expose said prosthesis;

e) disengaging said central control means from said mooring loops; and

f) removing said tubular introducer sheath, carrier means, and central control means.

21. An occlusive umbrella comprising:

a spring expanding assembly having a proximal and a distal end;

barbs attached to said proximal end of said spring expanding assembly;

a tubular graft having a longitudinal bore and having a proximal end and a distal end, said tubular graft open at said proximal end and closed at said distal end, said graft attached to said spring expanding assembly;

a dilator having a distal end and a proximal end, said proximal end of said dilator attached to said distal end of said tubular graft;

a first tubular catheter having a proximal end, a distal end, and a longitudinal bore, said first tubular catheter inserted into said longitudinal bore of said graft and attached to said proximal end of said dilator;

a second tubular catheter having a proximal end, a distal end, and a longitudinal bore, said distal end of said second catheter communicating with said proximal end of said first catheter;

a flexible rod having a proximal end and a distal end, said distal end of said flexible rod inserted into said

longitudinal opening of said first catheter and said longitudinal opening of said second catheter, said distal end of said flexible rod contacting said dilator head.

22. A flexible spring alignment and compression resistance assembly comprising:

a first and second spring expanding assembly each having a plurality of apertures;

a plurality of retaining shafts each having a first end and a second end, said shafts having a diameter equal to or smaller than said apertures of said first and said second spring expanding assemblies, said first end of each of said retaining shafts slidably inserted into one of said apertures of said first spring expanding assembly and said second end of each of said retaining shafts slidably inserted into one of said apertures of said second spring expanding assembly, a first protrusion attached to said first end and a second protrusion attached to said second end, said protrusions larger than said apertures in said first and said second spring expanding assemblies to prevent said protrusions from passing through said apertures.

23. A spring alignment and compression resistance assembly comprising:

a first spring expanding assembly having a plurality of apertures;

a second spring expanding assembly;

a plurality of retaining shafts each having a first end and a second end, said shafts having a diameter equal to or smaller than said apertures of said first spring expanding assembly, said first end of each of said retaining shafts slidably inserted into one of said apertures of said first

spring expanding assembly and said second end of each of said retaining shafts attached to said second spring expanding assembly, a protrusion attached to each of said first ends, said protrusions larger than said apertures in said first spring expanding assembly to prevent said protrusions from passing through said apertures.

add A1

add B9